What is claimed is:

1. A light pipe comprising:

a first dichroic prism having a first mirror plane, the first mirror plane inclined with respect to the axis of incident light and reflecting a first color beam among white light while transmitting the other color beams;

a second dichroic prism having a second mirror plane, the second mirror plane inclined with respect to the axis of incident light and reflecting a second color beam among the color beams transmitted by the first dichroic prism while transmitting the other color beam; and

a third dichroic prism having a third mirror plane, the third mirror plane inclined with respect to the axis of incident light and reflecting a third color beam transmitted by the second dichroic prism,

wherein each of the first, second, and third dichroic prisms includes reflective planes that reflect light that is incident at a predetermined angle due to a difference between the refractive indices of each of the reflective planes and the outside so that the incident light travels within the first, second, and third color dichroic prisms, and the reflective planes form the exteriors of the first, second, and third dichroic prisms and contribute to reduce loss in the first, second, and third color beams.

2. The light pipe of claim 1, further comprising:

a first polarized beam splitter which is installed on a light incidence plane of the first dichroic prism and transmits first light with one polarization direction among unpolarized white light toward the first dichroic prism while reflecting second light with the other polarization direction;

a second polarized beam splitter re-reflecting the second light received from the first polarized beam splitter toward the first dichroic prism; and

a 1/2 wavelength plate which is installed either between the first polarized beam splitter and the first dichroic prism or between the second polarized beam splitter and the first dichroic prism and converts the polarization direction of the second light to that of the first light, so that the unpolarized white light is converted into color beams with an identical polarization direction.

3. The light pipe of claim 2, further comprising a condensing lens that is installed opposite to a light incidence plane of the first polarized beam splitter and condenses and transmits the unpolarized white light.

4. The light pipe of claim 1, wherein the first, second, and third mirror planes are inclined at different angles with respect to the axis of the incident white light and reflect the first, second, and third color beams so that their axes are converged.

5. A light pipe comprising:

a first dichroic mirror plane reflecting a first color beam among incident light while transmitting second and third color beams;

a second dichroic mirror plane which is installed on the path of light transmitted by the first dichroic mirror plane, has an area equal to or different than an area of the first dichroic mirror plane, and reflects the second color beam while transmitting the third color beam; and

a third dichroic mirror plane which is installed on the path of light transmitted by the second dichroic mirror plane, has an area different from at least one of the areas of the first and second dichroic mirror planes, and reflects the third color beam.

6. The light pipe of claim 5, wherein first, second, and third dichroic prisms include the first, second, and third dichroic mirror planes, respectively.

7. The light pipe of claim 6, wherein the first, second, and third dichroic prisms are incorporated as one body.

8. The light pipe of claim 5, further comprising:

a first polarized beam splitter which is installed in front of the first dichroic mirror plane and transmits light with one polarization direction among unpolarized white light toward the first dichroic mirror plane while reflecting light with the other polarization direction toward a second polarized beam splitter;

the second polarized beam splitter which is installed below the first polarized beam splitter and re-reflects the light received from the first polarized beam splitter toward the first polarized beam splitter; and

a 1/2 wavelength plate which is installed between one of the first and second polarized beam splitters and the first dichroic mirror plane.

9. A light pipe comprising:

a first polarized beam splitter transmitting light in one polarization direction among unpolarized white light and at the same time reflecting light in the other polarization direction;

a second polarized beam splitter installed below the first polarized beam splitter;

a plurality of polarized beam splitters installed adjacent to the first and second polarized beam splitters;

a plurality of color selection polarizers which are installed in front of the plurality of polarized beam splitters, respectively, and change the polarization directions of corresponding color beams among incident light; and

a 1/2 wavelength plate which is installed between one of the first and second polarized beam splitters and a color selection polarizer closest to the first and second polarized beam splitters.

10. The light pipe of claim 9, wherein the plurality of polarization beam splitters are third, fourth, and fifth polarized beam splitters sequentially installed adjacent to the first and second polarized beam splitters, the plurality of color selection polarizers are a first color selection polarizer, which is installed between an array of the first and second polarized beam splitters and the third polarized beam splitter and changes the polarization direction of a first color beam among incident light, and a second color selection polarizer, which is installed between the third and fourth polarized beam splitters and changes the polarization direction of a second color beam among incident light, and a polarization converter is installed between the fourth and fifth polarized beam splitters and changes the polarization direction of a third color beam among incident light.

11. The light pipe of claim 10, wherein the polarization converter is one of a third color selection polarizer and a 1/2 wavelength plate.

12. The light pipe of claim 9, wherein the first through fifth polarized beam splitters, the first through third color selection polarizers, and the 1/2 wavelength plate are incorporated to form the light pipe.

13. A color illumination system comprising:

a light source producing and radiating light;

a light pipe, which includes first, second, and third dichroic prisms having first, second, and third mirror planes, respectively, and separates incident light according to a wavelength range and advances separated beams at different angles, wherein the first mirror plane is inclined with respect to the axis of incident light and reflects a first color beam among white light while transmitting the other color beams, the second mirror plane is inclined with respect to the axis of incident light and reflects a second color beam among the color beams transmitted by the first dichroic prism while transmitting the other color beam, the third mirror plane is inclined with respect to the axis of incident light and reflects a third color beam transmitted by the second dichroic prism, and the exterior of each of the first, second, and third dichroic prisms is formed by reflective planes which reflect light that is incident at a predetermined angle due to a difference between the refractive indices of each of the reflective planes and the outside so that the incident light travels within the first, second, and third dichroic prisms;

a first focusing lens focusing the separated beams; and

a scrolling unit which changes the paths of the separated beams focused by the first focusing lens and periodically scrolls the separate beams.

14. A color illumination system comprising:

a light source producing and radiating light;

a light pipe, which includes a first polarized beam splitter for transmitting light in one polarization direction among unpolarized white light and at the same time reflecting light in the other polarization direction, a second polarized beam splitter which is installed below the first polarized beam splitter, a plurality of polarized beam splitters which are installed adjacent to the first and second polarized beam splitters, a plurality of color selection polarizers which are installed in front of the plurality of polarized beam splitters, respectively, and change the polarization directions of corresponding color beams among incident light, and a 1/2 wavelength plate which is

installed between one of the first and second polarized beam splitters and a color selection polarizer closest to the first and second polarized beam splitters; and

a scrolling unit performing color scrolling by periodically changing the paths of the color beams, into which the light radiated from the light source has been separated by the light pipe.

15. The color illumination system of claim 14, wherein the plurality of polarization beam splitters are third, fourth, and fifth polarized beam splitters sequentially installed adjacent to the first and second polarized beam splitters, the plurality of color selection polarizers are a first color selection polarizer, which is installed between an array of the first and second polarized beam splitters and the third polarized beam splitter and changes the polarization direction of a first color beam among incident light, and a second color selection polarizer, which is installed between the third and fourth polarized beam splitters and changes the polarization direction of a second color beam among incident light, and a polarization converter is installed between the fourth and fifth polarized beam splitters and changes the polarization direction of a third color beam among incident light..

16. The color illumination system of claim 14, wherein the polarization converter is one of a third color selection polarizer and a 1/2 wavelength plate.

17. A projection system comprising:

a light source producing and radiating light;

a light pipe, which includes first, second, and third dichroic prisms having first, second, and third mirror planes, respectively, and separates incident light according to a wavelength range and advances separated beams at different angles, wherein the first mirror plane is inclined with respect to the axis of incident light and reflects a first color beam among white light while transmitting the other color beams, the second mirror plane is inclined with respect to the axis of incident light and reflects a second color beam among the color beams transmitted by the first dichroic prism while transmitting the other color beam, the third mirror plane is inclined with respect to the axis of incident light and reflects a third color beam transmitted by the second dichroic prism, and the exterior of each of the first, second, and third dichroic prisms is formed by reflective planes which reflect light that is incident at a predetermined

angle due to a difference between the refractive indices of each of the reflective planes and the outside so that the incident light travels within the first, second, and third dichroic prisms;

a first focusing lens focusing the separated beams;

a scrolling unit which changes the paths of the separated beams focused by the first focusing lens and periodically scrolls the separate beams;

a second focusing lens re-focusing beams transmitted by the scrolling unit;

a fly-eye lens array delivering the beams transmitted by the scrolling unit;

a light valve producing an image from beams transmitted by the fly-eye lens array; and

a projection lens unit magnifying the image produced by the light valve and projecting the magnified image onto a screen.

18. The projection system of claim 17, wherein the first, second, and third mirror planes are inclined at different angles with respect to the axis of the incident white light and reflect the first, second, and third color beams so that their axes are converged.

19. The projection system of claim 17, further comprising:

a first polarized beam splitter which is installed on a light incidence plane of the first dichroic prism and transmits first light with one polarization direction among unpolarized white light toward the first dichroic prism while reflecting second light with the other polarization direction;

a second polarized beam splitter, re-reflecting the second light received from the first polarized beam splitter toward the first dichroic prism; and

a 1/2 wavelength plate which is installed either between the first polarized beam splitter and the first dichroic prism or between the second polarized beam splitter and the first dichroic prism and converts the polarization direction of the second light to that of the first light, so that the unpolarized white light is converted into color beams with an identical polarization direction.

20. The projection system of claim 17, further comprising a condensing lens that is installed on a light path between the light source and the first polarized beam splitter and condenses and transmits the unpolarized white light.

21. The projection system of claim 17, wherein each of the first and second focusing lenses is a cylindrical lens which focuses an incident beam so that the cross-section of the incident beam is only reduced in one direction.

22. The projection system of claim 17, wherein each of the first and second focusing lenses is an optical diffraction element which has a diffraction pattern that focuses an incident beam so that the cross-section of the incident beam is only reduced in one direction.

23. The projection system of claim 17, wherein the scrolling unit comprises:

a first cylindrical lens array which includes a plurality of cylindrical lenses that have identical refractive power, are arranged adjacent to one another, and independently converge or diverge incident beams; and

a first driving source which drives the first cylindrical lens array to reciprocate in a direction perpendicular to the axis of the incident beams so that the beams passing through the first cylindrical lens array can be scrolled.

24. The projection system of claim 17, wherein the scrolling unit comprises:

a second cylindrical lens array which is apart from the first cylindrical lens array and includes a plurality of cylindrical lenses that have identical refractive power, are arranged adjacent to one another, and independently converge or diverge incident beams; and

a second driving source which drives the second cylindrical lens array to reciprocate in a direction perpendicular to the axis of the incident beams.

25. The projection system of claim 17, wherein the scrolling unit comprises:

a revolving cylindrical lens array which is rotatably installed on a light path and formed by arranging a plurality of cylindrical lenses with identical refractive power adjacent to one another on an outer circumference of a cylinder; and

a driving source which rotates the revolving cylindrical lens array.

26. The projection system of claim 25, wherein the revolving cylindrical lens array is an optical diffraction element that has a diffraction pattern that can perform the function of the cylindrical lenses.

27. The projection system of claim 17, further comprising a relay lens which delivers beams transmitted by the fly-eye lens array to a predetermined location.

28. A projection system which separates light emitted from a light source into a plurality of color beams, scrolls the color beams using a scrolling unit so that color bars can land on a light valve, processes the color bars according to an image signal applied to the light valve to form an image, magnifies the image, and projects the magnified image onto a screen, the projection system comprising a light pipe, the light pipe including: a first dichroic mirror plane reflecting a first color beam among incident light while transmitting second and third color beams; a second dichroic mirror plane which is installed on the path of light transmitted by the first dichroic mirror plane, has an area equal to or different than an area of the first dichroic mirror plane, and reflects the second color beam while transmitting the third color beam; and a third dichroic mirror plane which is installed on the path of light transmitted by the second dichroic mirror plane, has an area different from at least one of the areas of the first and second dichroic mirror planes, and reflects the third color beam.

29. The projection system of claim 28, wherein first, second, and third dichroic prisms include the first, second, and third dichroic mirror planes, respectively.

30. The projection system of claim 28, wherein the first, second, and third dichroic prisms are incorporated to form one body.

31. The projection system of claim 28, further comprising:

a first polarized beam splitter which is installed in front of the first dichroic mirror plane and transmits light with one polarization direction among unpolarized white light toward the first dichroic mirror plane while reflecting light with the other polarization direction toward a second polarized beam splitter;

the second polarized beam splitter which is installed below the first polarized beam splitter and re-reflects the light received from the first polarized beam splitter toward the first dichroic mirror plane; and

a 1/2 wavelength plate which is installed between one of the first and second polarized beam splitters and the first dichroic mirror plane.

32. The projection system of claim 28, wherein the scrolling unit comprises:

a first spiral lens disk which includes a plurality of cylindrical lens cells that are spirally arranged and is designed to be able to rotate;

a second spiral lens disk which is installed opposite to the first spiral lens disk and designed so as to rotate at the same speed as the first spiral lens disk; and

a glass rod installed between the first and second spiral lens disks.

33. The projection system of claim 28, further comprising a collimating lens which is installed between the light source and the light pipe and collimates incident light to form a parallel beam.

34. The projection system of claim 28, further comprising:

a first cylindrical lens which is installed between the light pipe and the scrolling unit and narrows the cross-section of the color beams focused on the scrolling unit; and

a second cylindrical lens which is installed behind the second spiral lens disk and collimating incident color beams to form a parallel beam.

35. The projection system of claim 28, further comprising first and second fly-eye lens arrays which cause beams transmitted by the scrolling unit to land on the light valve in such a way that beams of the same color are overlapped on its corresponding color area of the light valve.

36. A projection system comprising:

a light source producing and radiating light;

a light pipe, which includes a first polarized beam splitter for transmitting light in one polarization direction among unpolarized white light and at the same time reflecting light in the other polarization direction, a second polarized beam splitter

which is installed below the first polarized beam splitter, a plurality of polarized beam splitters which are installed adjacent to the first and second polarized beam splitters, a plurality of color selection polarizers which are installed in front of the plurality of polarized beam splitters, respectively, and change the polarization directions of corresponding color beams among incident light, and a 1/2 wavelength plate which is installed between one of the first and second polarized beam splitters and a color selection polarizer closest to the first and second polarized beam splitters;

a scrolling unit performing color scrolling by periodically changing the paths of the color beams, into which the light radiated from the light source has been separated by the light pipe;

a light valve producing a color image by processing the scrolling beams according to an image signal; and

a projection lens unit magnifying the image produced by the light valve and projecting the magnified image onto a screen.

37. The projection system of claim 36, wherein the plurality of polarization beam splitters are third, fourth, and fifth polarized beam splitters sequentially installed adjacent to the first and second polarized beam splitters, the plurality of color selection polarizers are a first color selection polarizer, which is installed between an array of the first and second polarized beam splitters and the third polarized beam splitter and changes the polarization direction of a first color beam among incident light, and a second color selection polarizer, which is installed between the third and fourth polarized beam splitters and changes the polarization direction of a second color beam among incident light, and a polarization converter is installed between the fourth and fifth polarized beam splitters and changes the polarization direction of a third color beam among incident light.

38. The projection system of claim 37, wherein the polarization converter is one of a third color selection polarizer and a 1/2 wavelength plate.

39. The projection system of claim 36, wherein the first through fifth polarized beam splitters, the first through third color selection polarizers, and the 1/2 wavelength plate are incorporated to form the light pipe.

40. The projection system of claim 36, wherein total reflective planes are formed as external planes of the light pipe other than a light incidence plane and a light emission plane.

41. The projection system of claim 36, wherein the scrolling unit comprises:

a first spiral lens disk which includes a plurality of cylindrical lens cells that are spirally arranged and is designed to be able to rotate;

a second spiral lens disk which is installed opposite to the first spiral lens disk and designed so as to rotate at the same speed as the first spiral lens disk; and

a glass rod installed between the first and second spiral lens disks.

42. The projection system of claim 41, further comprising a collimating lens which is installed between the light source and the light pipe and collimates incident light to form a parallel beam.

43. The projection system of claim 36, further comprising:

a first focusing lens which is installed between the light pipe and the scrolling unit and narrows the cross-section of the color beams focused on the scrolling unit; and

a second focusing lens which is installed behind the second spiral lens disk and collimating incident color beams to form a parallel beam.

44. The projection system of claim 36, further comprising first and second fly-eye lens arrays which cause beams transmitted by the scrolling unit to land on the light valve in such a way that beams of the same color are overlapped on its corresponding color area of the light valve.

45. The projection system of claim 36, wherein the scrolling unit comprises:

a cylindrical lens array which includes a plurality of cylindrical lens cells that are arranged to form a cylinder and is designed to be able to rotate; and

a driving source rotating the cylindrical lens array.

46. The projection system of claim 45, further comprising a collimating lens which is installed between the light source and the light pipe and collimates incident light to form a parallel beam.

47. The projection system of claim 45, further comprising:

a first focusing lens which is installed between the light pipe and the scrolling unit and narrows the cross-section of the color beams focused on the scrolling unit; and

a second focusing lens which is installed behind the second spiral lens disk and collimating incident color beams to form a parallel beam.

48. The projection system of claim 47, further comprising first and second fly-eye lens arrays which cause beams transmitted by the scrolling unit to land on the light valve in such a way that beams of the same color are overlapped on its corresponding color area of the light valve.

49. The projection system of claim 47, wherein the second focusing lens includes a central portion with a predetermined curvature and lateral portions that have a curvature different from the curvature of the central portion and are formed at both sides of the central portion and compensates for the difference between beams transmitted by the scrolling unit.